Sports Betting Market Size
Puerto Rico Gaming Market

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EXECUTIVE SUMMARY

In this report, The Innovation Group provides:
- Forecasted market potential for Puerto Rico in an environment with licensed and regulated sports wagering at brick-and-mortar casinos and in Hipódropo Camarero ("Hipódromo")
- Forecasted market potential for Puerto Rico in an environment with licensed and regulated sports wagering at casinos, Hipódromo, **and** off-track betting locations and galleras.
- Forecasted market potential for Puerto Rico in an environment with licensed and regulated sports wagering at the locations in the scenarios above **and** mobile and online sites.
- A discussion of tax rates in markets worldwide and a recommended range of tax rates for Puerto Rico to optimize gaming taxes and user experience
- A discussion of the precedent for and benefits of inclusion of OTBs, racetracks (Hipódromo), and mobile/online in the distribution model

To forecast revenues from sports betting, The Innovation group considers a geospatial, drivetime-based gravity model of Puerto Rico, data from a survey of prospective US sports bettors, information from US and worldwide comparable markets, and the existing gaming market in Puerto Rico today. A summary of our forecasts is as follows:

Puerto Rico Sports Betting Market Size Forecast ($ millions)					
Locations Allowing Sports Betting	**FY19-20**	**FY20-21**	**FY21-22**	**FY22-23**	**FY23-24**
Casinos and Hipódromo	$11	$19	$26	$30	$33
Casinos, Hipódromo, OTBs, Galleras	$19	$33	$45	$51	$57
Casinos, Hipódromo, OTBs, Galleras, Mobile & Online	$29	$51	$68	$77	$87

Note that this forecast includes a substantial ramp-up over time. We anticipate an approximate five-year ramp before the market is stable.

We recommend a **gaming tax rate of between 5%-15%** on sports betting revenue. This, combined with the federal excise tax of 0.25% of *handle*, which translates to approximately 4.5% of *revenue*, will combine to a total tax rate of approximately 10%-20% of total revenue, a level at which operators can operate profitably while still reinvesting in players through direct marketing, product development, and platform development. States such as Nevada (6.75%), New Jersey (9.75%), Mississippi (12%), and West Virginia (10%) operate comfortably in this range.

And, we believe that Puerto Rico will benefit from the **inclusion of OTBs, galleras, and mobile/online betting** in its distribution model for sports betting. Puerto Rico's vast network of OTBs provides convenient access to all Puerto Ricans, regardless of geographic location. This is important for realizing the full market potential in sports betting, as survey data shows that sports bettors are more sensitive to drivetime considerations than slot and table players. This makes sense, given that sports betting can often be transactional, versus hours of engagement with traditional gaming.
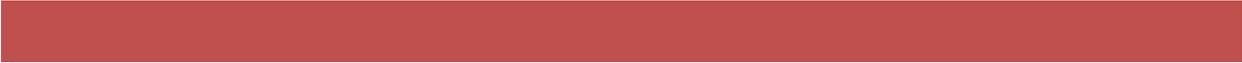
Finally, we consider the question of whether these revenues might cannibalize existing casino revenues. On the contrary, sports betting activates a different demographic of customer than traditional slots and table games, and we actually forecast **revenue upside** from the increased casino visitation. Across the legislative scenarios described above, we project between $5m (in the full scenario including mobile and online) and $8m (in the casinos only scenario) in annual incremental casino slot and table games revenues by FY23-24.

INTRODUCTION

The Puerto Rico Chamber of Commerce ("Client") retained The Innovation Group ("TIG") to prepare a forecast of sports wagering revenue in the Puerto Rico market area, assuming sports betting becomes legal on the island.

In May, the Supreme Court of the United States ruled in favor of New Jersey in *Murphy v. NCAA*, overturning PASPA, the Professional and Amateur Sports Protection Act. PASPA was the legislation that effectively rendered sports betting illegal in most of the United States. This SCOTUS ruling puts the legislation and regulation of sports wagering in the hands of the states. In addition to Nevada, many states, including New Jersey, Delaware, Pennsylvania, Mississippi, Rhode Island, and West Virginia, have already passed legislation legalizing sports wagering, and several other states have bills being considered in their legislatures.

The Innovation Group built its revenue projections by combining primary research, secondary research, and its internal models. Namely, for the primary research, TIG administered a survey to more than 7,500 adults from across the United States to ask them about their would-be sports betting habits. Additionally, TIG studied legislative environments from across the globe where sports betting is already legal. Finally, TIG tailored this data to the demographics and geography of the populations in Puerto Rico. This data was synthesized into TIG's internal gravity model to develop a forecast for revenue.

Assumptions

In evaluating prospective gaming revenues, the following assumptions are made:

- No major economic downturn will be experienced in the region;
- The gaming environment (i.e., the distribution of casinos and types of gaming) in the immediate region does not vary substantially from what was offered in 2018;
- Total gaming taxes, including the federal handle tax, paid by sports wagering operators will be between 10% and 20% of gross gaming revenue (GGR);
- Sportsbook offerings are consistent with those offered in the Las Vegas market and yield a blended hold of approximately 5.5%;
- Sports wagering is offered in Puerto Rico beginning in FY19-20.

Additional specific modeling assumptions, particularly where we discuss mobile and online sports betting, can be found throughout the report.

PUERTO RICO GAMING LANDSCAPE & DEMOGRAPHIC TRENDS

In this section, we describe the existing gaming market in Puerto Rico and demographic trends on the island. Our revenue model, discussed in full detail later in the document, combines forecasted sports betting revenue per adult with adult population to provide a market potential estimate; therefore, it is important we understand both the prevalence of casino gaming in Puerto Rico and demographic trends that may influence future adult population size.

Existing Gaming Environment

As of early 2018, there were 16 land-based casinos in Puerto Rico and one horse track. The table below summarizes the existing casinos and their gaming positions and locations. We assign one gaming position to each slot machine and six gaming positions to each table game. On average, each casino below offers 376 gaming positions. San Juan offers the highest number of casinos. Hipódromo Camarero offers on-track and off-track betting, as well as different betting games.

Casino Market in Puerto Rico				
Name	Tables	Slots	Gaming Positions	City
Courtyard by Marriott Aguadilla	9	323	377	Aguadilla
Hyatt Place Bayamón Hotel & Casino	8	361	409	Bayamón
Four Points by Sheraton Caguas Real	10	463	523	Caguas
Embassy Suites Hotel & Casino	7	161	203	Carolina
Courtyard by Marriott Isla Verde Beach Hotel	13	311	389	Carolina
Costa Bahía Hotel & Convention Center	7	203	245	Guayanilla
Hyatt Place Manatí Hotel & Casino Atlanti Coati	6	303	339	Manatí
Mayaguez Resort & Casino	7	302	344	Mayaguez
Mayaguez Holiday Inn & Tropical Casino	7	354	396	Mayaguez
Holiday Inn & Tropical Casino Ponce	9	305	359	Ponce
Ponce Plaza Hotel & Casino	8	271	319	Ponce
Hilton Ponce Golf & Casino	11	293	359	Ponce
Wyndham Río Mar Beach Resort & Country Club	8	130	178	Río Grande
Sheraton Convention Center Hotel & Casino	19	431	545	San Juan
La Concha A Renaissance Resort	36	311	527	San Juan
San Juan Marriott & Stellaris Casino	24	353	497	San Juan
Total	189	4875	6009	

Source: https://www.prtourism.com/dnn/Portals/0/PDF_Statistics/PR%20Casinos%20Gaming%20Offer.pdf
(Information as of 01 March 2018)

Gaming Legislation Additions and Changes to Current Laws

Land-based casinos are strictly regulated and taxed. Almost half of net gaming revenues are paid in gaming tax, and the tax revenues support government programs including University of Puerto Rico, Committee for the Development of the Tourism Industry, Treasury, and Puerto Rico Tourism

Company. Horse betting is allowed, including online. In March 2012, the Puerto Rican Government authorized and approved access to the first online horse betting website, which enabled residents to bet on races in the US and across the world.

An additional form of gambling is cockfighting, a centuries-old tradition in Puerto Rico. There are about 80 cockfighting clubs that are regulated by the government. The most popular cockfighting sites (called galleras), are La Muda in San Juan, the Club Gallistico de Puerto Rico in Carolina, La Gallera De Cerro Gordo in Bayamón, and the Gallera Los Cocos in Quebradillas. Recent reports estimate that cockfighting generates about $18 million in revenues and provides nearly 30,000 jobs. However, Congress passed a bill that made cockfighting illegal in all U.S. territories beginning in 2019.

There are also illegal slot machines operating in bars and restaurants across the island. Because of the lack of reporting, it is not clear how much revenue is generated by this market, but estimates are that there are tens of thousands of such machines operating. To capture some tax revenue from this illegal market, in December 2018 as part of a tax overhaul (Law 257), Puerto Rico's lawmakers legalized up to 25,000 additional slot machines, with the possibility of annual increases after a two-year evaluation, up to a total of 45,000 slots. These slot machines will be located in businesses across the island, outside of casinos.

Demographic Trends Overview

Per capita GDP Purchasing Power Parity (PPP) for Puerto Rico has increased by 0.77 percent annually between 2015 and 2017. The U.S. annual compound growth rate (CAGR) of GDP per capita was about 1.2 percent.

GDP per Capita (PPP) Comparison				
	2015	**2016**	**2017**	**CAGR**
Puerto Rico	38,800	39,000	39,400	0.8%
United States	58,400	58,900	59,800	1.2%

Source: https://www.cia.gov/library/publications/the-world-factbook/geos/rq.html

The positive annual growth of GDP per capita in Puerto Rico can be explained by a sharp rise in outmigration to the US due to the steady high unemployment rate. The unemployment rate was about 11.5 percent in December 2017. The overall GDP growth has been negative for each of the last 11 years starting from 2008. The U.S. minimum wage law applies to Puerto Rico's workers, and per capita income is about two-thirds of the U.S. income per capita.

Puerto Rico is still recovering from Hurricane Maria that occurred in September 2017 and caused electrical outages to 100% of the territory and loss of housing for many residents. It forced many Puerto Ricans to migrate to the mainland US. As a result, Puerto Rico's population, which has been declining for a decade, decreased by an additional 3.9 percent. The table below demonstrates Puerto Rico's population trend over the years 2010-2018 and provides our forecasted population from 2019-2023.

Puerto Rico's Population (2010-2018 Actual, 2019-2023 Forecast)

Year	Number of Residents	Annual Growth
2010	3,721,525	
2011	3,678,732	-1.1%
2012	3,634,488	-1.2%
2013	3,593,077	-1.1%
2014	3,534,874	-1.6%
2015	3,473,166	-1.7%
2016	3,406,495	-1.9%
2017	3,325,001	-2.4%
2018	3,195,753	-3.9%
2019*	3,163,795	-1.0%
2020*	3,132,158	-1.0%
2021*	3,100,836	-1.0%
2022*	3,069,828	-1.0%
2023*	3,039,129	-1.0%

Source: https://www.cia.gov/library/publications/the-world-factbook/geos/rq.html

* Forecast based on 2011-2016 CAGR (-1.5%), discounted to -1.0% based on high outmigration 2017-2018

Tourism is an essential source of income in Puerto Rico with estimated arrivals of more than 3.8 million tourists in 2017 and 5.2 million tourists in 2018. The high increase in the number of visitors is due to the steep rise in cruise tourists. Despite the fiscal impact of tourism on the overall economy, tourists make up less than 10% of the island's gaming revenue. Due to the highly local nature of sports, as well as the proliferation of sports wagering throughout the US and the world, we anticipate that tourism will comprise a de minimus portion of sports betting handle in Puerto Rico.

To assist in forecasting mobile and online revenues, we consider the portion of the population that uses the internet, as reported by the CIA. The table below summarizes the number and proportion of internet users in 2016. After a full recovery from Hurricane Maria, we expect the proportion of internet users in Puerto Rico to be at least as large as that in the United States, allowing us to use US data as a comparable for Puerto Rico.

Internet Users Comparison (2016)

	Number of Users	Percent of Population
Puerto Rico	2,873,895	80.3%
United States	246,809,221	76.2%

Source: https://www.cia.gov/library/publications/the-world-factbook/geos/rq.html

Sports Wagering at Pari-Mutuels and Online

Puerto Rico has several types of land-based gambling facilities: 16 traditional casinos primarily located in coastal areas, one horse racetrack, hundreds of off-track betting (OTB) facilities spread throughout the island, and cockfighting galleras.

The results of our survey, detailed in a later section of this report, indicate that participation in sports wagering has a much greater sensitivity to drivetime than we see for other forms of gaming. This is understandable; unlike slots and table games, where players may invest a significant amount of time driving in order to spend several hours playing in a casino, sports wagering is much more transactional. Some bettors enjoy watching the game at the sportsbook; others watch at restaurants, bars, at home, or not at all, leaving the casino after making their wagers. Therefore, minimizing the drivetime barrier is imperative to maximizing market participation and thereby sports betting volumes and associated tax revenues. The locations of casinos present a challenge here, as the coastal locations do not provide convenient access to inhabitants in the interior.

As such we believe, and our models indicate, that Puerto Rico is best-served by activating sports wagering at the OTBs and galleras, as well as mobile/online. Issuing licenses to the OTB operators, which are geographically diverse and which service the interior of the Commonwealth, reduces drivetime and allows a distribution that is convenient to Puerto Ricans. Casinos are still able to create sportsbook experiences and provide amenities that better service the bettors that, looking for a sports and casino *experience*, would drive to the coast to participate, but the smaller OTBs and galleras can service the transactional customer looking to make a wager after work, before driving home to watch the game.

States including New Jersey, Pennsylvania, Delaware, West Virginia have set a precedent of issuing sports betting licenses to pari-mutuels. In particular, we look to New Jersey to provide an illustrative example of the positive impact we expect in Puerto Rico. We include information about these and other states below, including information about active sports wagering legislation in states with horseracing to illustrate the trend, which is to include racetracks and OTBs as potential operators.

New Jersey

New Jersey has geographically isolated stand-alone casinos and pari-mutuel wagering facilities near highly populated, metropolitan areas. Casinos in New Jersey are restricted to Atlantic City, which is in the southern part of the state. The state's two racetracks, Monmouth Park and The Meadowlands, are located in central and northern New Jersey, respectively, and do not offer casino-style gaming such as slot machines or table games.

In June 2018, New Jersey passed legislation allowing casinos and racetracks in the state to accept in-person, online, and mobile sports wagers. Later that same month, Monmouth Park, one of the state's racetracks, opened the state's first sports book. While sports wagering has only operated for a few months, initial indications out of Monmouth Park are that sports wagering has actually *increased* horse racing handle (and tax revenues to the state). Dennis Drazin, CEO of Darby Development, which operates Monmouth Park, has said that "[sports betting] numbers have been

very strong… I think this shows you sports betting is not going to cannibalize our product. In fact, it makes it even stronger when we have more people there doing both… I think sports betting really brought a lot more people in and they were the kind of people [who] wager on racing, too."[1]

A total of ten properties in NJ now operate brick-and-mortar sportsbooks, eight in Atlantic City and two at racetracks. Monmouth Park and the Meadowlands, the two racetracks, represent two of the top three brick-and-mortar sports betting revenue generators in the state, and through November 2018, New Jersey's sports betting handle has been half of Nevada's[2], which we believe is strong for a state still getting sportsbooks up and running, and where many casinos are still sorting out their online partnerships. The convenience of the racetrack sportsbooks allows trial and adoption by bettors wishing to wager but unwilling to commute to Atlantic City. The geographic diversity also allows the state to attract bettors from neighboring states that have not yet legalized sports wagering. In particular, the Meadowlands racetrack in northern NJ is particularly well-positioned to attract sports bettors from the New York City market, whose alternative would be to make the 2-hour drive to Atlantic City to place their wagers. Indeed, the Meadowlands is the strongest brick-and-mortar sports betting revenue producer in the state.

Pari-Mutuel and Sports Betting in Other States

We comment on the current situation in several other states.

Pennsylvania passed legislation in October 2017 allowing sports betting, subject to the repeal of PASPA, at all gambling facilities in the state. This includes OTB locations: Greenwood received approval to operate sports betting at both Parx Casino and the South Philadelphia Turf Club OTB. Currently, six casinos and one of the state's eight OTB locations have gone through the application process and are authorized to offer sports betting. Additional casinos, including several of Pennsylvania's new mini-casinos, are also likely to offer sports betting.

Delaware legalized sports wagering at the state's three commercial casinos, all of which have live horseracing, either harness or thoroughbred.

West Virginia authorized brick-and-mortar and internet sports wagering for the state's five casinos, four of which have live racing on greyhound and/or thoroughbred racing tracks.

Arkansas voters authorized gaming expansion and sports betting by referendum. Sports betting will be authorized not only at the two new casinos (non-racing) but also at Southland Park and Oaklawn racetracks.

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[1] See, for example, https://www.app.com/story/sports/baseball/2018/06/18/nj-sports-betting-monmouth-park-racing-not-cannibalized-first-weekend/709523002/
[2] https://www.playusa.com/new-jersey-sports-betting-november/

Rhode Island offers legal sports betting at its Twin River and Tiverton casinos, both of which offer simulcast racing. Initial indications are that simulcast handle has grown slightly year-over-year, offering further evidence that sports wagering does not cannibalize horseracing.

Nevada has no major live racing, but sports betting is authorized at casinos, where simulcast is conducted. Nearly all OTBs in Nevada are labeled "Race and Sports Book," as operators associate the two offerings.

New Mexico is the only state with active sports betting and active live racing, but without any live racetracks offering sports. New Mexico sports wagering is only operating at one tribal casino, and then only because of language in the tribal compact; in other words, the state of New Mexico did not actively pass sports betting legislation and develop regulations excluding the racetracks from licensure. Rather, sports betting is allowed at the tribal casinos by default due to the tribal compact structure. We expect New Mexico to revisit this in the next several years and to allow the racetracks to offer sports wagering in addition to the tribes.

Mississippi has legal sports wagering in the state's casinos, but it has no material horse racing.

Mobile Betting

New Jersey and Nevada both have online sports betting. In January 2019, 79% of the sports handle in NJ was online/mobile. The remaining 21% was in casinos. Around half of Nevada's sports handle is mobile. West Virginia launched mobile sports betting in December 2018, and while Pennsylvania legalized mobile betting, the rollout has stalled pending a decision in the ongoing legal dispute over Wire Act enforcement.

Like OTBs, which are geographically diverse and provide convenient access, online and mobile apps serve the transactional customer. However, mobile and online betting allows for multiple providers to compete for a player's business without any drivetime considerations. This competition provides a better player experience through both marketing dollars and investment in new technologies, and this in turn grows the market.

MARKET RESEARCH

In this section, we describe research that guided the modeling process. This research has two parts.
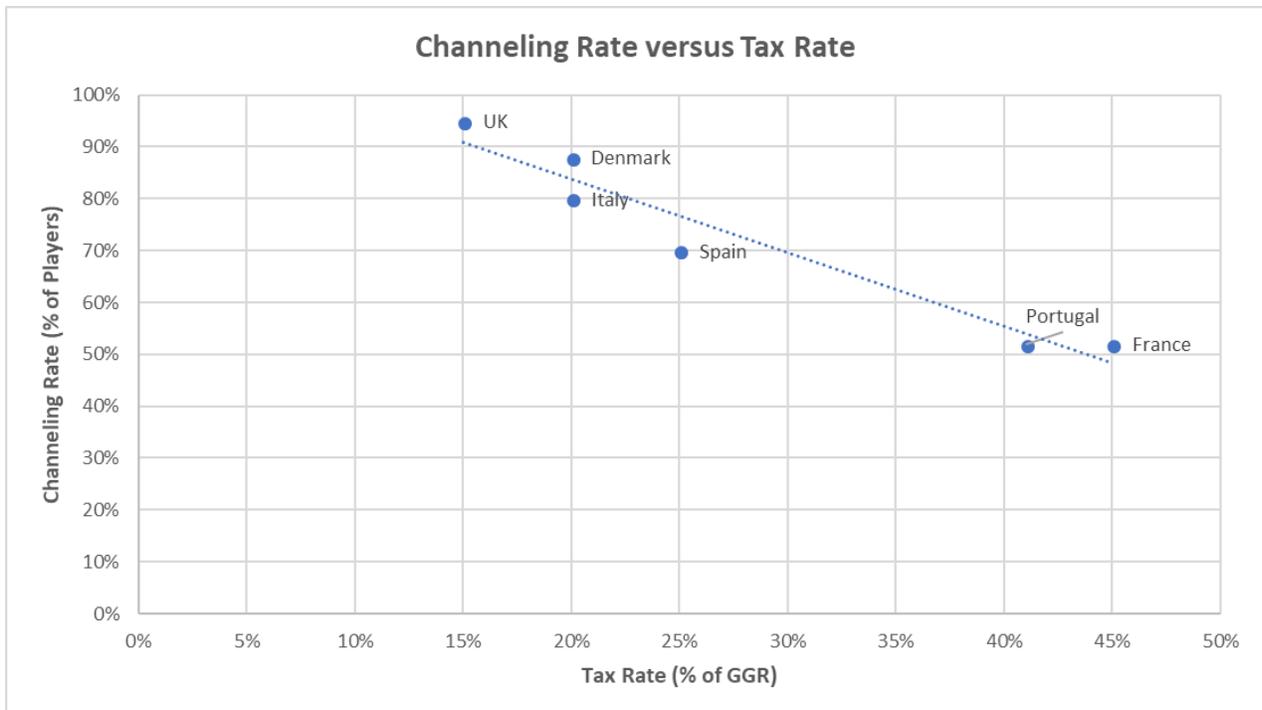
First, we looked at US and worldwide market comparisons to gauge performance across the world and to understand the likely legislative outcomes in neighboring states. Second, we conducted primary research regarding prospective sports bettors via a survey instrument. The information gathered in this research forms the basis of the revenue model discussed later in this document.

Worldwide Markets and Comparative Performance

Sports wagering is legal and regulated in many jurisdictions across the globe. Below we include information about these jurisdictions, noting where we feel that jurisdictions are good or bad comparables for US markets.
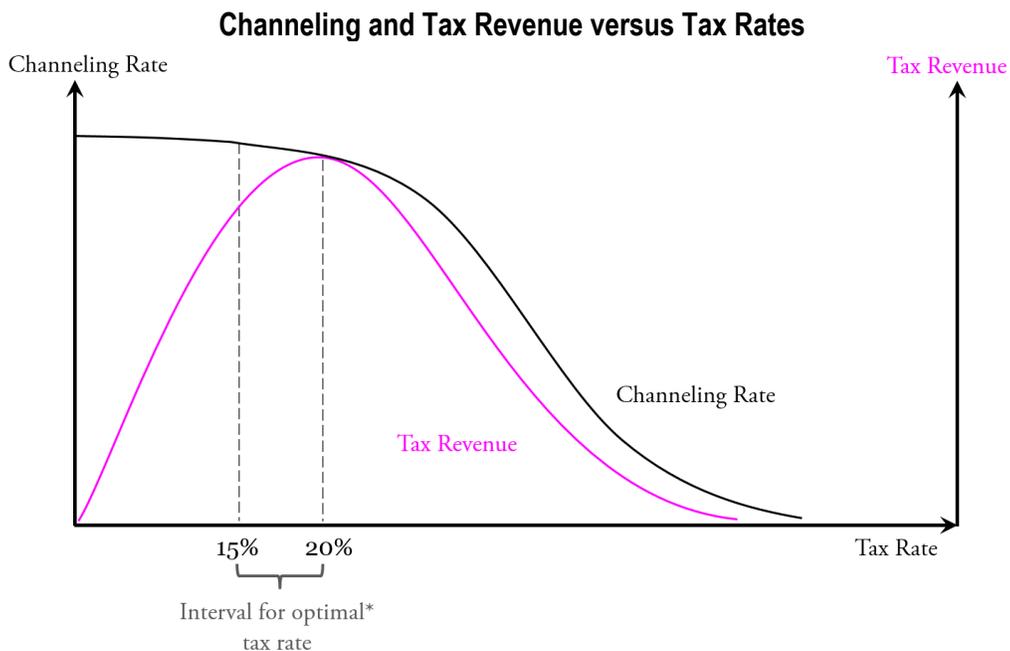
Channeling and Taxation in International Markets

Europe has some of the world's most mature sports betting markets, and we look to them as comparables to evaluate the potential in the US market. Several of the markets, however, have some glaring differences to what we're expecting in the United States. In particular, a study by Copenhagen Economics shows channeling rates – the portion of play channeled into legal and regulated channels as opposed to playing on black market or grey market sites – versus effective tax rates. What we see immediately removes several countries as comparable.

Source: Copenhagen Economics, Table A.1
(https://www.copenhageneconomics.com/dyn/resources/Publication/publicationPDF/8/368/1478078895/copenhagen
-economics-2016-licensing-system-for-online-gambling.pdf)

This data shows that high tax rates correlate with players remaining with black market or grey market sports betting shops. This warrants a few remarks. First, black market shops are not (necessarily) the seedy underbelly of the sports betting world that some may imagine from years past. These are generally sophisticated operations where players can place wagers by telephone, online, or on their mobile devices. They are doubly convenient since players play on credit; they need not front the wager as they must do at a casino sportsbook. Second, we comment on the relationship between tax rates and black-market play. Casino operators will change their operating models to accommodate higher tax rates. With more of the earnings going to taxes, operators make up for this shortfall in ways that detract from the player experience. For example, we see reduced player marketing budgets and lower reinvestment in product and feature development. Player marketing suffers, and worse, lines become less favorable to players (akin to 'tightening' slot machines), causing players to lose at a higher rate (risking, for example, $120 to win $100 instead of a more typical risking $110 to win $100 on an approximately 50-50 wager). In some cases, the burden of increased tax rates is so high that the operators feel they can no longer offer a good product. In Poland, for example, operators have *closed down* rather than operate in an environment that doesn't provide a good player experience and an acceptable margin for the operators[3].

As an example of how taxation can impact participation, the following graph shows estimated channeling rates and tax revenues as a function of tax rates.

Channeling and Tax Revenue versus Tax Rates

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[3] See, for example, https://www.casino.org/news/polands-brutal-new-online-gambling-tax-regime-sparks-mass-operator-exodus

The above graph suggests that optimal tax rates are achieved at a tax rate of approximately 15%-20% of gaming revenue, and data clearly shows a negative correlation between tax rates and channeling rates; in other words, as tax rates increase, less of the overall market is channeled into regulated channels, and more flows to the black or grey markets. The United States has a 0.25% federal excise tax on sports betting *handle*, or total wagers, and in general, sports books retain around 5.5% of handle as casino win. Therefore, the federal tax on handle equates to 4.5% of gaming revenue. Deducting the federal excise tax from the optimal total tax rate implies an optimal *state* tax rate of around 10%-15% of gaming revenue, and since we see states achieving success with rates in the 5%-10% rate as well, we recommend rates for Puerto Rico in the 5%-15% range, causing operators to have a total gaming/excise tax liability of between 10% and 20% of revenue.

When evaluating potential market size and dynamics, we anticipate states producing tax rates in this range. We therefore look primarily at the UK (15% tax) and Denmark (20% tax) as European comps, rather than jurisdictions with higher tax rates, such as Spain, Portugal, and France.

We also remark that in conversations with European operators, we have found a general consensus that 10%-20% is a reasonable tax environment, though we are cognizant of the fact that they have financial incentive for lower tax rates. We include a table with sports betting revenue per adult (of legal gambling age) below the discussion of other markets.

It is worth noting that the European markets have a mature online market for both casino gaming and sports wagering. In Denmark, for example, 51% of sports wagers are mobile, and 16% are online, while only 33% are in person. So, when evaluating them as comparable, we must take these differences into account.

Nevada

Until recently, Nevada was the only state in the United States with legal and regulated single-game sports wagering. As the (former) lone market for sports betting, Nevada – Las Vegas in particular – was a tourism destination for people wanting to wager on sports. As a comparable, then, it has deficiencies, but we can still use the figures from the state to help guide our estimates.

Nevada has both brick-and-mortar sports wagering and legal mobile sports betting. Players set up and deposit money into an account at a physical sportsbook location, and they can then use a mobile device from anywhere in the state of Nevada to wager that money on sports. Mobile betting provided a large boon to Nevada sports betting when it rolled out in 2012; growth in sports win from 2011 to 2016 exceeded growth in total gaming revenue by 61 percentage points, growing 65% versus 4% growth in total gaming revenue. Most of the sports betting growth occurred in 2012-2014, the first three years of mobile app rollouts.

The United States has a 0.25% federal tax on sports betting handle. Since hold at Nevada sports books – revenue as a percentage of handle (total wagers) – is around 5.5%, this tax amounts to

around 4.5% of casino win. Additionally, Nevada has a state gaming tax of 6.75%, bringing the effective tax rate in the state to ~11.25%.

Revenue Comparables

Based on the discussion of European and US (Nevada) comps above, we produce the following table of revenue per adult (of legal gaming age).

Sports Betting Market Comparables			
	Sports GGR	Gamer Pop	Win Per Adult (21+)
Denmark [1,2,3]	$ 368,394,461	4,612,795	$80
United Kingdom [4,5,6]	$ 6,668,934,365	51,879,246	$129
Nevada (Locals) [7]	$ 65,933,000	1,461,394	$45
Nevada (Locals) [8]	$ 108,084,000	1,461,394	$74
Nevada (Locals) [9]	$ 134,502,000	2,193,225	$61

[1] Revenue: https://spillemyndigheden.dk/sites/default/files/filer-til-download/the_danish_gambling_authority_the_year_in_numbers_2017_0.pdf

[2] Used conversion rate of .1582USD=1DKK, 17Q4 weighted avg (https://www.x-rates.com)

[3] Adult population per http://www.statbank.dk/FOLK1A, used 17Q4 data

[4] Revenue GBP2.0B online + GBP3.3B live (http://www.gamblingcommission.gov.uk/PDF/survey-data/Gambling-industry-statistics.pdf)

[5] Conversion rate of 1.26USD=1GBP, 17H1 weighted avg (https://www.x-rates.com)

[6] Linearly interpolated population from 2016-2026 to get 2017 population, used 2016 populations by age (https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/articles/overviewoftheukpopulation/july2017)

[7] North Las Vegas, Boulder, and "Other" Clark County casino sports revs (ex-Strip, Downtown, Mesquite, Laughlin), vs Clark County pop

[8] Clark County ex-Strip vs Clark County Pop

[9] State ex-Strip vs State pop

[7,8,9] NV populations based on July 2017 census estimates, pro-rating the 18-64 population linearly to 21-64 (https://www.census.gov/quickfacts/fact/table/nv/PST045217)

[7,8,9] NV gaming data by region from NV GCB Gaming Revenue Report 2017 (http://gaming.nv.gov/modules/showdocument.aspx?documentid=12725)

We make several notes from this data. First, Great Britain is an incredibly mature market with a wide array of online options. Sports betting shops abound – there are approximately 9,000 retail sports betting shops in the UK. Additionally, nine of the 20 teams (45%) in England's Premiership are kit-sponsored (i.e., name on their jersey) by betting companies, down from 10 (50%) last year, pointing to a marketing and advertising environment that is mature and friendly to betting companies. These differences make us believe that the UK estimate is higher than what we'd experience in a US jurisdiction with online betting, despite the breadth of sports leagues (both college and professional) available to bet in the US.

By contrast, we believe Denmark to be a reasonable comp for a US online sports betting environment. While Denmark has betting shops, until a few years ago, all of them were run by

Danske Spil, the Danish lottery. The betting shop market is still maturing and being introduced to new competition there. While betting shops provide an advantage over a brick-and-mortar casino only environment, we note that (1) racetracks and off-track betting facilities provide quick access to would-be bettors within Puerto Rico who don't want to drive an hour to go to a casino, and (2) the US arguably has a stronger sports culture with several professional and collegiate sports leagues.

Lastly, we consider Nevada. We note that Nevada does not have full online sports betting. Bettors may bet using mobile devices with accounts that they establish at a brick-and-mortar casino and fund either in cash in person, or via deposits to a prepaid card linked to a sports account. In Nevada, it is challenging to provide an accurate figure of win per adult. The gambling-based tourism to the state produces an inflated estimate of what locals spend if we simply look at sports GGR versus population. To address this, we provide three estimates and a discussion of their merits. First, we look at sports betting revenue in North Las Vegas + Boulder + "Other" Clark County betting facilities (exclusive of LV Strip, Downtown, Laughlin, and Mesquite) versus total Clark County population. This should be an underestimate of actual spend, since some Clark County locals will bet in the tourist-heavy resort areas, such as the Strip. This estimate is $45 per adult. Alternate estimates that only exclude the Las Vegas Strip are $61 per adult (21+) when looking statewide and $74 per adult when looking at Clark County. Both of these alternate estimates should be high for two reasons: (1) there is considerable out-of-state revenue at resorts not on the Las Vegas Strip (e.g., Reno, Tahoe, Laughlin, Downtown LV), and (2) gaming is ubiquitous in Nevada – particularly in Clark County – and Nevada residents have a much higher propensity to game than average Americans.

Combining all of this, we estimate a baseline sports revenue of $80 per adult (21+) in an online environment and $45 per adult in a "hybrid" environment, with mobile linked to a brick-and-mortar account, a la the Las Vegas model. Above, we noted that Nevada's sports betting revenue grew 61% in excess of market when mobile betting was introduced. Backing this 61% growth out from the most conservative $45 estimate provides a brick-and-mortar comparable of around $28 per adult. We use this $28 as a starting point for a national model, and we adjust the Puerto Rico-specific model based on geospatial and demographic features in Puerto Rico.

The Innovation Group's Sports Wagering Survey

The Innovation Group developed and administered a survey to understand likely behaviors of prospective sports bettors. The survey had 7,500 respondents nationwide. Responses across the states were relatively consistent when adjusted for demographics and drivetime.

Methodology / Setup

We built and administered a nationwide survey using Survey Monkey. We purchased responses from CINT, an industry-standard provider of panel data for survey research, through the Survey Monkey platform. For diversification and to measure bias in the CINT panel versus other data sources, we supplemented these results with additional responses purchased through MTurk, an Amazon platform. In all, we collected approximately 7,500 responses, of which around 3,000 said that they would be likely to place sports wagers in the next twelve months if it were regulated.

Demographics

We asked the survey-takers about their age, gender, ZIP code, education-level, household income, and race/ethnicity. We built a regression model to adjust likelihood to wager based on these demographic variables. From the regression results, we adjust zip code level forecasts based on demographic information obtained from the census.

Wager Propensity and Frequency

We wanted to determine what portion of people would place sports bets and how many sports bets they'd place in a year under the various legislative scenarios.

To estimate propensity, we asked the survey-takers to identify with one of the following statements (presented in this order):
- If sports betting were legal in CASINOS ONLY, I would be likely to place a sports bet in the next 12 months
- I would not be likely to place a sports bet in a CASINO, but I would be likely to place a sports bet on a MOBILE DEVICE in the next 12 months
- I would not be likely to place a sports bet in the next 12 months.

To estimate frequency, we asked survey-takers about specific sports, identifying Baseball (Major League), Basketball (NBA), Basketball (NCAA Men's), Football (NFL), Football (NCAA), and Hockey (NHL) as the major sports people bet on. We asked survey-takers how often they bet on each of these, and gave them the options of:
- More than 5 times per week, during the season
- 2-5 times per week, during the season
- Every two weeks, during the season
- Once a week, during the season
- A few times per year, but less frequent than every two weeks
- Once per year
- Unlikely to bet on this sport

Additionally, we asked them if they would have any interest in betting on the following sports (which they may not have known that they could bet on): MMA/Boxing, Soccer, Tennis, Golf, Auto Racing, and Olympics.

Average Bet Size

To estimate average bet size, we asked guests how much they'd bet when placing a sports bet. "If sports wagering were legal and regulated in your state, how much do you think you would wager on each individual game/event that you bet, on average?"

FORECAST OF MARKET SIZE

Survey Analysis and Key Drivers of Behavior

Based on the results of the survey and based on the comparable data compiled through market research, The Innovation Group built a predictive model to forecast revenue. The model relies on a baseline provided by the comparables, and several adjustments are made to consider the effects of the local markets we are analyzing.

First, we adjust estimated spend based on demographics of the region. Then we look at drivetime. We acquired several pieces of demographic information for each of our respondents and tested each demographic variable for importance and significance in our predictive model. We looked at age, gender, education-level, household income, and race/ethnicity. After consideration, our model makes minor adjustments at a zip code level to account for differences in gender, age, household income, and race/ethnicity. The largest driver of behavior from the survey, however, was drivetime.

Drivetimes

While demographics certainly vary from zip code to zip code, across entire states and regions, these effects tend to flatten out to near national averages. The most prominent driver that we find, then, is drivetime to the nearest casino, which as we've discussed has a considerable influence on whether prospective sports bettors will actually make a wager. Based on the survey data we collected, we modeled propensity as a function of drivetime.
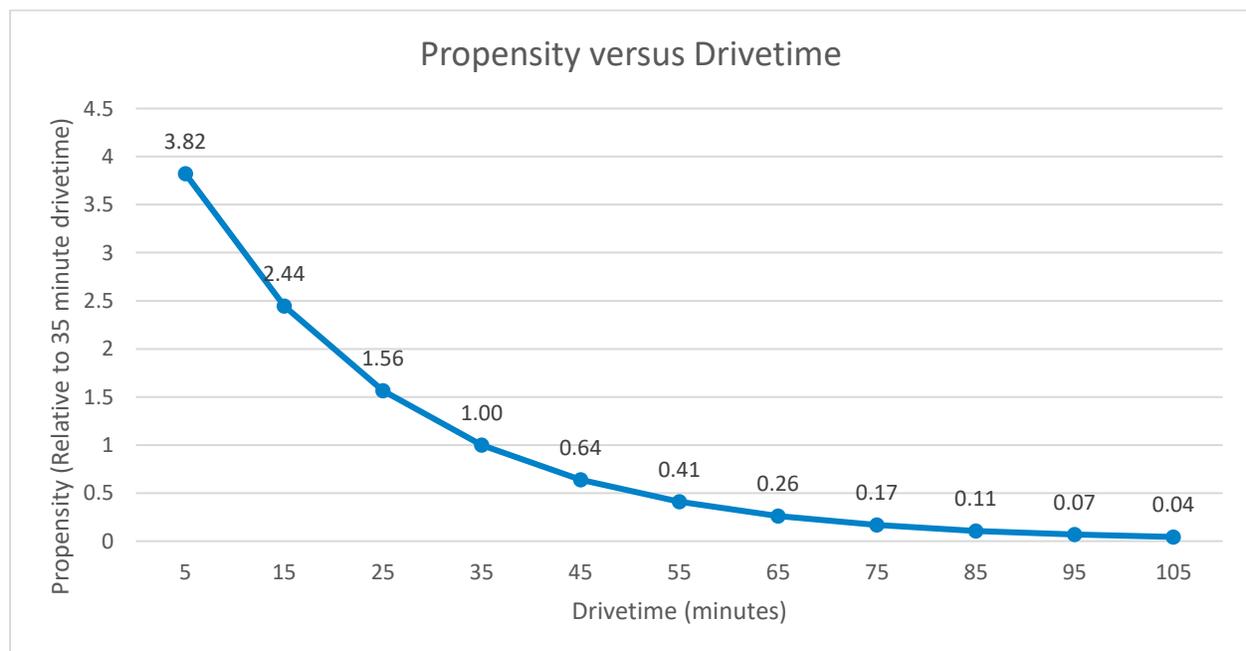
The data shown here are relative, not absolute, since the model incorporates so many pieces. But as an example, this model suggests that going from 35 to 45 minutes drivetime reduces propensity by 36%, and similarly reducing drivetime from 35 minutes to 25 minutes increases propensity by 56%. And from 15 minutes to 35 minutes, we reduce propensity by nearly 70%.

Economic Differences

Before layering in drivetimes and demographic differences related to sportsbetting, we adjusted our baseline $28 per adult that we found as our lowest estimate of the Nevada market. This adjustment should be largely reflective of behavioral and economic differences between Puerto Rico and the mainland U.S., which we measure by comparing slot Puerto Rican slot revenue per capita versus slot revenue per capita in US markets with similar casino distribution as Puerto Rico. Namely, these states have easy commercial casino access in nearly all major metropolitan areas and population centers.

			Comparison of Slot Revenue per Capita		
State	**Total Slot Revenue [1] ($m)**	**Est. Rev % from Locals [2]**	**Adult Population [3]**	**Est. Slot Revenue from Locals ($m)**	**Local Slot Revenue Per Capita**
Iowa	$1,276	50%	2,294,085	$638	$278
Louisiana	$2,373	50%	3,381,061	$1,187	$351
Ohio	$1,473	90%	8,745,578	$1,325	$152
IA-LA-OH Total	$5,122	62%	14,420,723	$3,150	$218
Puerto Rico	$265	90%	2,649,994	$238	$90
Puerto Rico Adjustment					*41%*

[1] Based on 2017 total GGR from AGA *State of the States*, est. 90% slot revenue. PR from twice the amounts shown in https://www.prtourism.com/dnn/Portals/0/PDF_Statistics/Slot%20Machines%20Report%202017-18.pdf
[2] Innovation Group estimates
[3] 2017 population based on 2010 census and 0.7% CAGR

Multiplying this 41% by $28, we arrive at a new baseline win per adult of around $11. This will be the driver of our geospatial model, which will incorporate the demographic and drivetime adjustments discussed above.

Market Forecast – Casinos and Hipódromo Camarero

In this section, we consider a legislative and regulatory scenario where sports wagering is legal at brick-and-mortar casinos and at Hipódromo Camarero. Per the discussion of slot comparables earlier in this report, we used $11 per adult as a brick-and-mortar baseline.

In developing the full analysis, a gravity model was employed. Gravity models are commonly used in location studies for commercial developments, public facilities, and residential developments. First formulated in 1929 and later refined in the 1940s, the gravity model is an analytical tool that defines the behavior of a population based on travel distance and the availability of goods or

services at various locations. The general form of the equation is that attraction is directly related to a measure of availability such as square feet – or in the context of a gaming-oriented gravity model a measure such as total gaming positions – and inversely related to the square of the travel distance. That is, the gravity model quantifies the effect of distance on the behavior of patrons while also considering the impact of competing venues.

The basic formulation is that the interaction between two or more gaming venues is based on Newton's Law of Universal Gravitation: two bodies in the universe attract each other in proportion to the product of their "masses" – here, gaming positions – and inversely as the square distance between them. Thus, expected interaction between gaming venue i and market area j is shown as:

$$k \times \frac{W_i \times P_j}{d_{ij}^2}$$

where W_i = the "weight" given to gaming venue i (in most models, we approximate this by the number of slot machines, or "gaming positions," in venue i), P_j = the population (21+) in market area j, d_{ij} = the distance between market area j and gaming venue i, and k = an attraction factor relating to the quality and amenities to be found at each gaming venue in comparison to the competing set of venues.

When this formulation is applied to each gaming venue gaming revenue generated from any given zip code is distributed among all the competing venues. That is, this model produces the share of the total revenue allocated to each sports wagering venue.

In this model, we did not vary k by property for several reasons, primarily that (1) placing a sports wager does not necessitate meaningful interaction with the property – in other words, a portion of sports bettors will make a wager and immediately leave the property – and (2) we expect that the introduction of sports wagering in the state will prompt most operations to make significant changes to property offerings, both in terms of a sportsbook buildout and in terms of food and beverage outlets and other amenities.

We use zip codes to develop the gravity model, pulling population estimates, household incomes, and demographic breakouts from census data and using Google Maps for drivetimes. From this, we calculate the revenue potential from the zip code and apportion it to the casinos, racetracks, and off-track betting facilities based on the gravity model's results.

Our revenue per adult in a fully stabilized environment ranges from approximately $13 in FY19-20 to $14.50 in FY23-24, though in early years we discount this to reflect the time it takes to introduce and market the product. Shown below is our market size forecast:

Puerto Rico Sports Betting Market Size Forecast ($ millions) – Casino/Hipódromo ONLY					
Locations Allowing Sports Betting	FY19-20	FY20-21	FY21-22	FY22-23	FY23-24
Casinos and Hipódromo	$11	$19	$26	$30	$33

Note that we ramp to stability over a five-year window.

Market Forecast – Casino, Hipódromo, OTB, and Galleras

In this section, we consider a legislative and regulatory scenario where sports wagering is legal at brick-and-mortar casinos, at Hipódromo Camarero, at off-track betting facilities throughout Puerto Rico, and at galleras. To approximate the distribution of the hundreds of OTBs and galleras, we assume that each resident of PR has access to a sportsbook within 10 minutes drivetime. We then apply these parameters to the same gravity model used above for the casino model to achieve revenue per adult figures of approximately $23 in FY19-20 to $25 in FY23-24 in a stabilized environment. Again, we discount these revenues in early years to reflect the industry's setup and early stage growth, yielding the following revenue estimates:

Puerto Rico Sports Market Forecast ($ millions) – Casinos/Hipódromo/OTBs/Galleras ONLY					
Locations Allowing Sports Betting	FY19-20	FY20-21	FY21-22	FY22-23	FY23-24
Casinos, Hipódromo, OTBs, Galleras	$19	$33	$45	$51	$57

Market Forecast – Mobile and Online

Finally, we provide a high-level forecast of the market potential if sports betting is legal at casinos, OTBs, Galleras, Hipódromo Camarero, *and* in both mobile and online environments. In this distribution scenario, we assume that all land-based sports betting license-holders will have the ability to obtain one or more mobile/online sports betting licenses, supplying consumers with an array of betting options. Additionally, we assume that there are available mobile/online payment processing mechanisms to fund mobile and online wallets and that tax rates for mobile and online sports betting are in line with those for land-based sports betting.

When forecasting revenue potential in a mobile environment, we begin by using Denmark as a comparable, with a win-per-adult of $80. We discussed rationale for using Denmark in the section above regarding market comparables. In our first method, we discount the Danish comp using the same 41% discount that we arrived at in the slots example above. This discount assumes that the US would behave similarly to Denmark in a fully open mobile and online sports betting environment, and we believe that this is reasonable. Puerto Rico's FY23-24 forecasted adult population of 2.2m yields a market potential of $82m. We triangulate this against the Nevada comparable, where we saw a sports betting market size increase of 61% with the advent of mobile sports betting. Applying this 61% increase to the estimated market size of $57m in the convenient access scenario, we arrive at a market potential of $92m. We note that these estimates are nearly equal. Averaging the two, we arrive at our forecast of $87m in a market with stabilized operations.

Puerto Rico Sports Betting Revenue Potential - Mobile/Online	
	2023
Model 1: Compare to Denmark	
Puerto Rico Population (21+)	2,290,484
Revenue Per Adult	$32.9
Market Potential ($ millions)	$82
Model 2: Apply Nevada Growth	
Brick-and-Mortar Potential from Geospatial Model ($ millions)	$57
Growth Rate from Nevada	61%
Market Potential ($ millions)	$92
Model 3: Average of Models 1 and 2	
Market Potential ($ millions)	**$87**

A complete five-year forecast for mobile and online betting is shown below. Noting that Denmark has two-thirds of its sports betting revenue from mobile and online, and William Hill's US CEO has stated that 64% of their business is mobile, we believe that two-thirds mobile/online and one-third land-based is a good approximation of market dynamics in the long-run.

Puerto Rico Sports Betting Market Size Forecast ($ millions) – with Mobile & Online					
Locations Allowing Sports Betting	FY19-20	FY20-21	FY21-22	FY22-23	FY23-24
Casinos, Hipódromo, OTBs, Galleras, Mobile & Online	$29	$51	$68	$77	$87

It is worth noting that 80% of the handle in New Jersey year-to-date (January and February 2019) is from mobile/online, but New Jersey has a poor retail distribution network, and large parts of the state's population must drive upwards of 30 minutes to an hour to reach the nearest sports wagering facility.

Market Forecast – Summary

Combining the three distribution scenarios above, we arrive at the following summary of results:

Puerto Rico Sports Betting Market Size Forecast ($ millions)					
Locations Allowing Sports Betting	FY19-20	FY20-21	FY21-22	FY22-23	FY23-24
Casinos and Hipódromo	$11	$19	$26	$30	$33
Casinos, Hipódromo, OTBs, Galleras	$19	$33	$45	$51	$57
Casinos, Hipódromo, OTBs, Galleras, Mobile & Online	$29	$51	$68	$77	$87

ANCILLARY REVENUE

While overall revenue from a zip code was comp-based and flexed with a drivetime-based propensity model, we need to look closer at visitation statistics and other behavioral characteristics to understand the impact on ancillary revenue.

As part of the primary research (survey), we asked several questions surrounding likely sports betting trips. One that focused on incremental visitation was:

1) If a nearby casino added the ability to bet on sports, you would likely ...
- *sometimes make separate trips for sports betting, and sometimes bet sports when you were going to the casino anyway*
- *always make separate trips to the casino for the purpose of sports betting*
- *bet on sports only when you were already going to the casino*

The frequency of responses is displayed in the following table:

	TOTAL
sometimes make separate trips for sports betting, and sometimes bet sports when you were going to the casino anyway	36%
always make separate trips to the casino for the purpose of sports betting	5%
bet on sports only when you were already going to the casino	59%
TOTAL	**100%**

From this, we can estimate incremental visitation at approximately 23% of sports-betting trips – half of visitation from the "sometimes make separate trips for sports betting, and sometimes bet sports when you were going to the casino anyway" group [36%], and 100% from the "always make separate trips to the casino for the purpose of sports betting" group [5%].

Additionally, we relied on conversations with sources at Las Vegas sportsbooks to estimate that bettors will make approximately 3 bets per trip, which leads to around 12 trips per year at our model's estimated frequency of 37 bets/year on average.

For gaming capture and food and beverage behavior, we used responses from the question:

> *When visiting the casino to make a sports bet, you would likely watch the game from (check all that apply): [responses in table below]*

We re-weighted responses so that each respondent was worth one. For example, if a respondent checked three boxes, we'd contribute a third of the respondent's visits to each location, yielding the following:

Response	Raw Counts	Weighted Avg*
The sportsbook	150	5.2%
A bar/restaurant IN the casino	693	31.3%
The casino floor while playing casino games	717	34.7%
A bar/restaurant NOT IN the casino	268	8.7%
Home / a friend's home	476	20.2%
N=1419	2304	100.0%

This implies a property capture of 71%. 35% of respondents said they'd watch the game from the casino floor while playing. However, in our conversations with operators, the industry has seen a much higher percentage of transactional players who do not stay on the casino floor or in the resort. The generally smaller size of the properties in Puerto Rico exacerbate this phenomenon, so in our model we used a 15% overall casino capture.

The following table provides a summary of forecasted incremental gaming revenue for FY23-24 to illustrate the additional potential. We forecast a $25 average bet in Puerto Rico, versus $40-50 from our US-based survey.

Incremental (Non-Sports) Gaming Revenue Analysis - 2023, Casino Scenario	
Casino Revenue Per Trip [1]	$33
Avg Handle Per Ticket	$25
Bets Per Trip	3.0
% Sports Betting Trips Incremental [2]	23%
Casino Capture Rate	15%
Incremental Gaming Revenue [3]	85%
Total Sports Handle ($m)	$604
Total Win ($m)	$33
Total # Bets (millions)	24.1
Total trips with sports bet (millions)	8.0
Incremental trips (millions)	1.9
Incremental trips with casino capture (millions)	0.3
Incremental Non-Sports Casino Revenue ($m)	**$8**

[1] Estimated from nationwide and regional comps, adjusted based on PR slot revenue per capita

[2] Based on survey results, estimated that roughly 23% of trips are triggered by sportsbook

[3] Increased trips likely to dilute customer wallet per trip; this estimates true incremental

In the mobile/online scenario, where we forecast $87m in year 5 revenue, we anticipate around two-thirds ($58m) of revenue coming from online and mobile channels, and the remaining $29m coming from the land-based entities. Our geospatial model forecasts approximately 70% ($20m) of the land-based revenue coming from the casinos and Hipódromo. Applying the same visitation and capture rates as above to the $20m revenue, we arrive at approximately $5m in incremental slot and table game revenues.

OTHER BENEFITS

While revenue from gaming tax on sports betting revenues may be the primary benefit considered of legalizing sports wagering on the island, we briefly summarize some of the ancillary benefits.

We have already noted the forecasted increases in gaming tax from increased casino visitation. Economic impacts may include the impact from additional construction done to create sportsbooks or sports-themed restaurant and bar experiences as well as job creation in both the casino and technology sectors. Puerto Rico has a rich sports culture, including baseball, basketball, boxing, and golf – several of the biggest sports betting markets behind soccer (worldwide) and football (US). This presents multiple revenue and investment opportunities on the island that may not only grow the interest in and breadth of sports, but also may provide a boost to sports tourism, already a key initiative of Puerto Rico's tourism industry. We are already seeing partnerships between sports betting operators and professional sports teams and leagues, data providers, and even food and beverage vendors. And this is to say nothing of the myriad opportunities that advertisers will no doubt find with teams, leagues, and vendors across the island.

As sports betting evolves, we also expect to see new lines of business develop. As one example, we expect new media-oriented businesses to take shape as we see more media attention on the betting aspect of sports. The need for more qualitative and quantitative content – from data and statistics to podcasts and articles – will grow around even the most niche markets when betting is allowed.

We expect these impacts to positively benefit the entire island economy.

DISCLAIMER

Certain information included in this report contains forward-looking estimates, projections and/or statements. The Innovation Group has based these projections, estimates and/or statements on our current expectations about future events. These forward-looking items include statements that reflect our existing beliefs and knowledge regarding the operating environment, existing trends, existing plans, objectives, goals, expectations, anticipations, results of operations, future performance and business plans.

Further, statements that include the words "may," "could," "should," "would," "believe," "expect," "anticipate," "estimate," "intend," "plan," "project," or other words or expressions of similar meaning have been utilized. These statements reflect our judgment on the date they are made and we undertake no duty to update such statements in the future.

Although we believe that the expectations in these reports are reasonable, any or all of the estimates or projections in this report may prove to be incorrect. To the extent possible, we have attempted to verify and confirm estimates and assumptions used in this analysis. However, some assumptions inevitably will not materialize as a result of inaccurate assumptions or as a consequence of known or unknown risks and uncertainties and unanticipated events and circumstances, which may occur. Consequently, actual results achieved during the period covered by our analysis will vary from our estimates and the variations may be material. As such, The Innovation Group accepts no liability in relation to the estimates provided herein.